

NOVEMBER 2019 Update

Semiconductors for RRH Forecast Update

Major changes to the forecast over the last three months include:

1. We've updated the Macro Base Station forecast, increasing the long-term forecast for 5G incrementally and adjusting our 2019 figures to account for Huawei's slowdown in the Sept/October timeframe.
2. In our last update, we anticipated that Huawei would run out of FPGA RFSoc inventory by the end of October, and our estimate now appears to be accurate. We heard recently that Huawei has started production on an ASIC-based 5G radio head, but we have not yet confirmed the performance of their unit. We have adjusted our FPGA/ASIC/RFSoc projections based on an expectation that Huawei will produce 5G using their ASIC for 2020.
3. We've adjusted market shares in the power amplifier market based on earnings guidance by NXP and other companies. The market figures cited by NXP match with our overall market size, although their estimate of NXP market share is higher than our estimate.
4. We've adjusted the shares of GaN and LDMOS based on ongoing production of 5G, although the trend toward higher GaN slowed down in Q3 due to the problems at Huawei.
5. We've adjusted ADC and DAC forecast numbers and market shares to reflect the strong earnings report by Analog Devices (double digit wireless growth) and the disappointing guidance by Texas Instruments (20% drop in communications revenue). These overall figures cover much wider market areas than just our mobile RRH market, so we have adjusted our market shares based on mobile-specific market factors:
 - a. We estimate that all FDD base stations and legacy TD-LTE base stations still use discrete ADCs and DACs.
 - b. TDD-based 5G Massive MIMO base stations generally use the Xilinx RFSoc with integrated ADCs and DACs, so we have removed the majority of this market from the discrete ADC/DAC tracking page.
6. We don't collect quarterly data on PLLs and small-signal RF devices, so we have not updated

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